

Revision of the genus *Anoratha* MOORE, 1867 (Lepidoptera: Noctuidae: Hypeninae).

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Abstract

All hitherto known species of the genus *Anoratha* MOORE, 1867 are redescribed and illustrated. The diagnostic features of the genus are given. The lectotypes for the following taxa are designated: *Anoratha costalis* MOORE, 1867 and *A. paritalis* WALKER, [1859] 1858. The relations of the genus to other genera are discussed.

Zusammenfassung

Alle bisher bekannt gewordenen Arten der Gattung *Anoratha* MOORE, 1867 werden wiederbeschrieben und abgebildet. Die Gattung wird auf Basis ihrer diagnostischen Merkmale definiert. Lectotypen folgender Taxa werden designiert: *Anoratha costalis* MOORE, 1867 und *A. paritalis* WALKER, [1859] 1858. Die generischen Verwandtschaftsverhältnisse werden diskutiert.

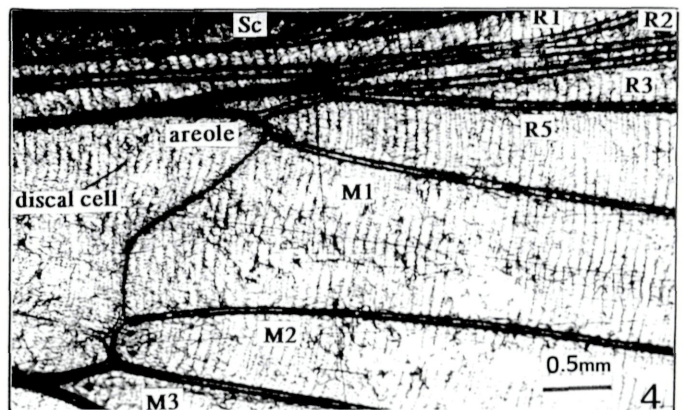
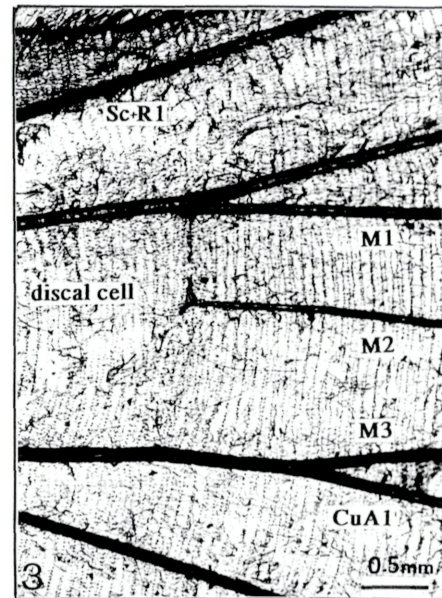
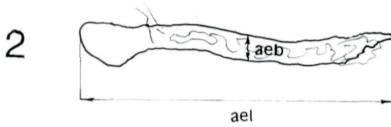
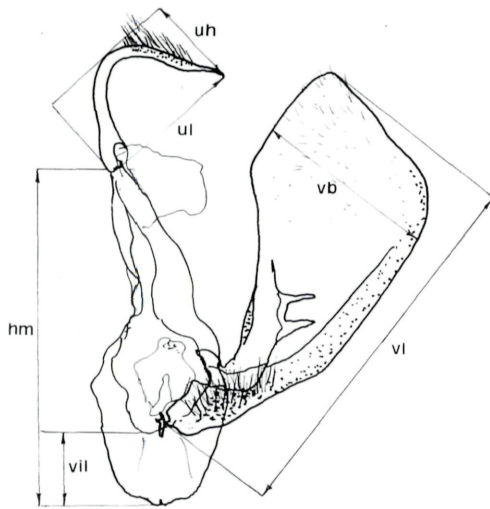
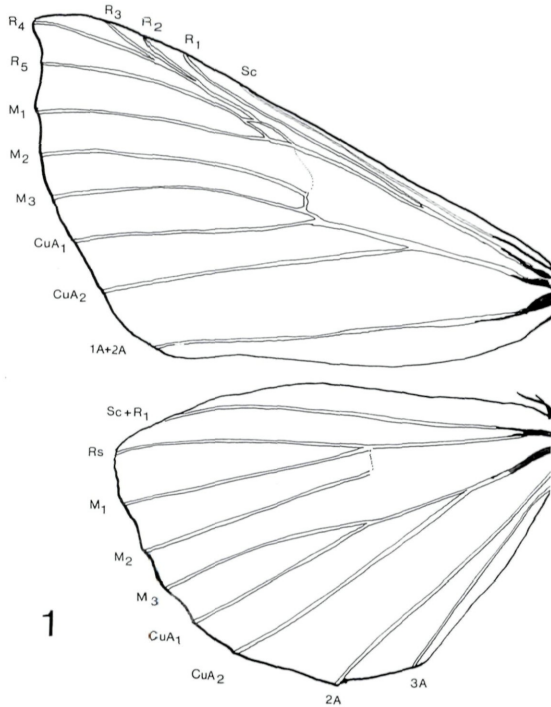
Key words: *Anoratha*, Hypeninae, lectotype designation, Noctuidae, Oriental Region, redescrptions.

Introduction

The genus *Anoratha* was described by MOORE (1867) by monotypy. Type species is *A. costalis* MOORE, 1867. There are five closely related species known to exist in the Oriental Region.

This paper is the first approach to a more detailed knowledge of the genus, its anatomic features and its species spectrum. All hitherto known species are redescribed and illustrated, the genitalia and further features of taxonomic importance are illustrated. All species show a significant though unique concept with a low tendency of variation. This is true for the external as well as the genitalia characters. The huge and dull coloured moths are rarely found in collections and nothing is known about behaviour and biology.

The type material of all *Anoratha* species is kept in the Natural History Museum, London (BMNH).



Figs. 1-4:
Fig. 1: *Anoratha sinuosa* WILEMAN & SOUTH, 1916 - wing venation, left ♀, right ♂.- **Fig. 2:** *Anoratha* sp.- groundplan of ♂-genitalia.- **Fig. 3:** *Anoratha paritalis* (WALKER, [1859] 1858) - details of forewing.- **Fig. 4:** *Anoratha paritalis* (WALKER, [1859] 1858) - details of hindwing.

Abbreviations (according to LÖDL 1993a and 1993b):

II	2nd joint of labial palpus	gl	total length of female genitalia	RM	orbicular spot
III	last joint of labial palpus			SF	dots along outer margin
A1 - A8	abdominal segments 1-8	hm	distance vinculum - uncus base	St 1 - 8	sternit 1 - 8
aeb	width of aedeagus	I	length of forewing	T 1 - 8	tergit 1 - 8
aed	aedeagus	NIHMW	Naturhistorisches Museum Wien	TeE	teguminal ear
acl	length of aedeagus			ub	width of uncus
AM	apical moon	NM	reniform spot	uh	height of uncus
b	width of forewing	pab	posterior abdom. brush	ul	length of uncus
bb	width of corpus bursae	PF	arrow marks of forewing	vb	width of valve
bl	length of corpus bursae	Q2	antemedial line	vil	length of vinculum
BMNH	The Natural History Museum (= British Museum), London	Q3	postmedial line	vl	length of valve
		Q4	postmedian line of hindwing	W	subterminal line
CF	costal dots			ZSF	Central symmetry system

Anoratha MOORE, 1867

Type-species: *Anoratha costalis* MOORE, 1867

Diagnostic features:

- Huge, brown coloured moths with significantly marked Q3 and fine pointed apex. Costa normally with bright white or yellowish stripe.
- Wings and abdomen in the males long and slender. A significant sexual dimorphism is present.
- Labial palps long and straight.
- Postspiracular hood present, consisting of a caudal and a cephal part.
- A8 of the male sex with a simple pab on the ventro-distal area. Granulated fields of scale insertions on the ventral and on the dorsal surface of A8 present. Sclerotized ribs on A8 exhibit different shape and are of specific value.
- A3 of the male sex bears ventro-proximally exposed, flabby „wings“ of the exoskeleton and clasps which do proceed inwards with specifically different apophyses. These are probably the origin of muscles and turned out to be of diagnostic importance.
- M2 and M3 not parallel in the "classic" sense of the Hypeninae (Fig. 1).
- Male genitalia with "bat-wing" valve, well developed sacculus with long hair-like scales and a double-coned process in the middle.
- Vinculum broad and big, protruding proximally, rounded at the end.
- Uncus with a knee.
- The aed long, small, thin, with a broadened coecum and a distal tip.
- Female genitalia very simple, similar to those of the genus *Phanaspa* WALKER, [1866] 1865.
- Apophyses anteriores short.
- Ductus bursae short, strongly sklerotized.
- Bursa weak and flabby, short and extraordinarily small, without signa.

Anoratha costalis MOORE, 1867

(Figs. 5-6, 14-22)

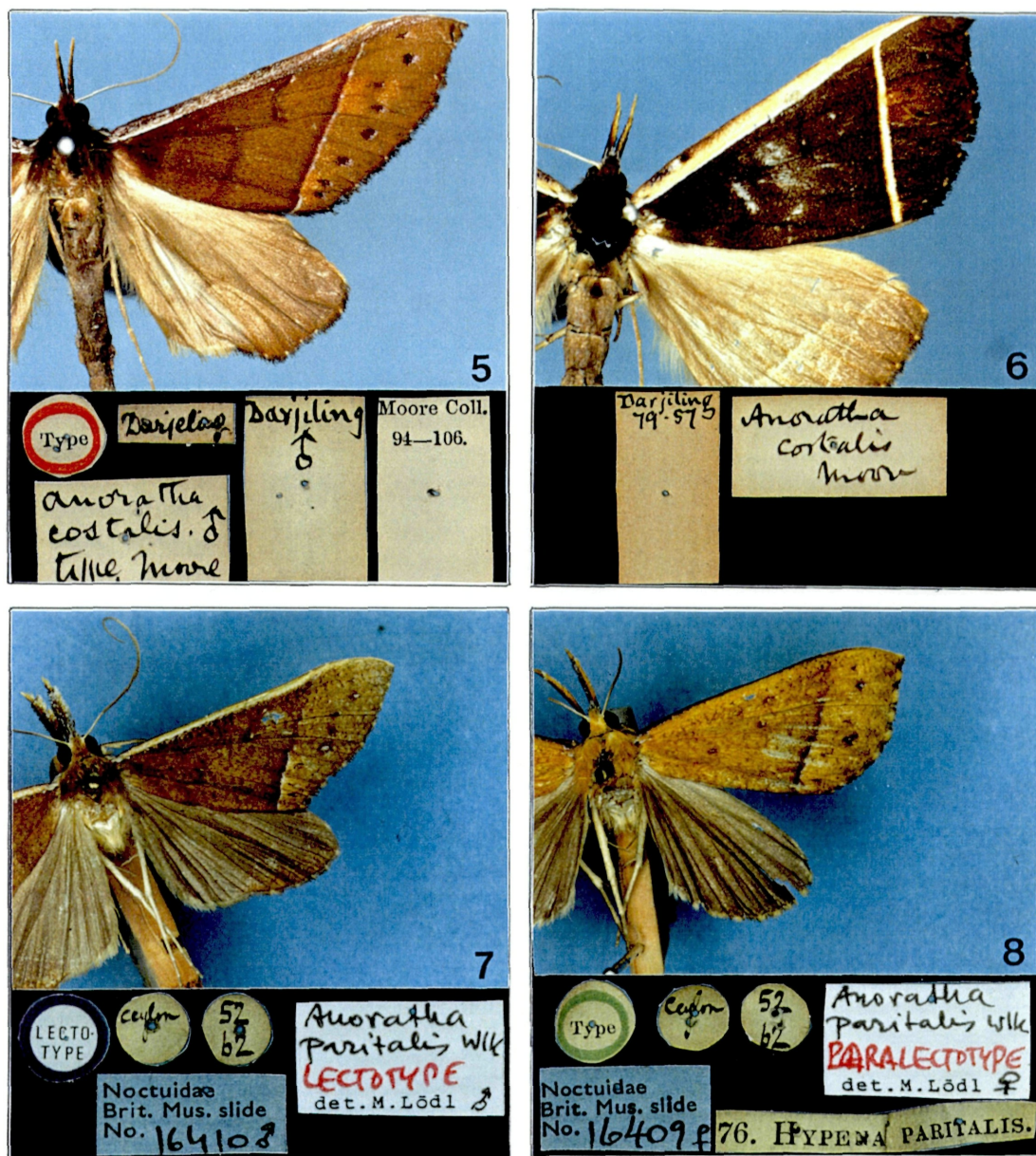
Anoratha costalis MOORE, 1867: 82, pl. 7, fig. 9.

Type material:

Lectotype (by present designation): ♂, [India] "Type \ Darjeling \ Darjiling ♂ \ Moore Coll. 94-106. \ *Anoratha costalis* ♂ type Moore \ NIHMW gen.prap. M.Lödl no. 659 ♂ \ Noctuidae Brit.Mus.slide 15360 ♂" (BMNH) (Abb. 5) [The dorsal part of the protruding genitalia obviously was damaged by previous handling, therefore the uncus and the tegumen were missing].-
Paralectotype: 1 ♀ Darjiling ♀, Type, Moore coll. 94-106., [Abdomen missing] (BMNH).

Additional material:

India: 1 ♀ Assam; 1 ♀ 1524, Darjeeling, Moore type, 1 ♀ NW. China, Wic Cheng 1904-198; 1 ♀ Darjiling. 79-57 [abdomen missing]; 1 ♀, "Darjiling 79-57 \ *Anoratha costalis* Moore \ NIHMW gen.prap. M.Lödl no. 660 ♀ \ Noctuidae Brit.Mus.slide 15361 ♀" (BMNH).

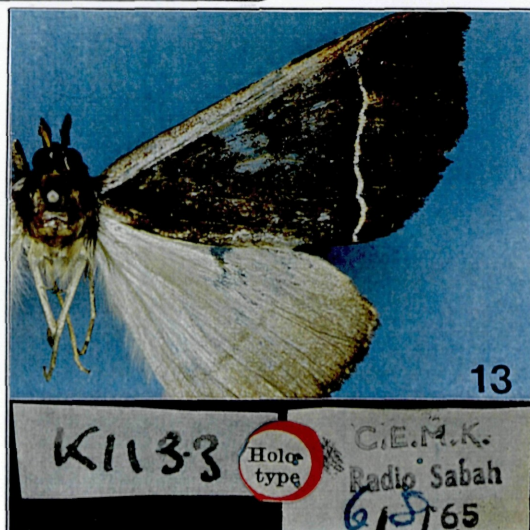
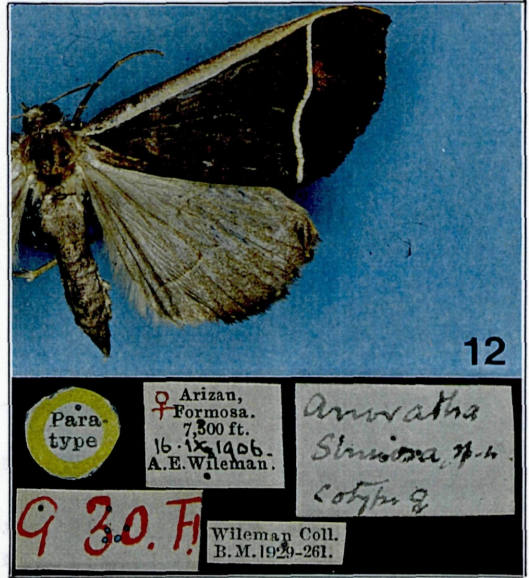
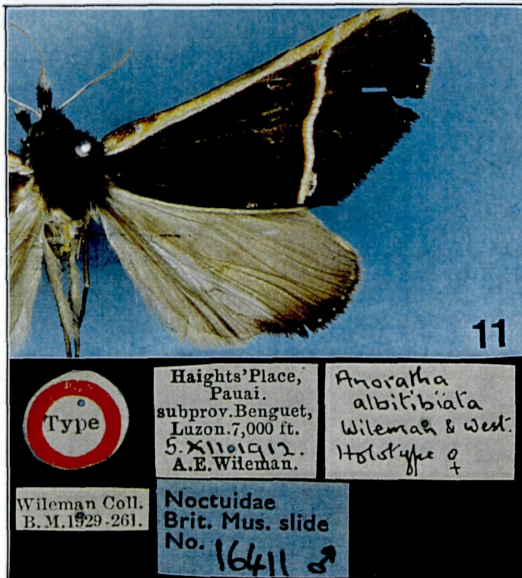
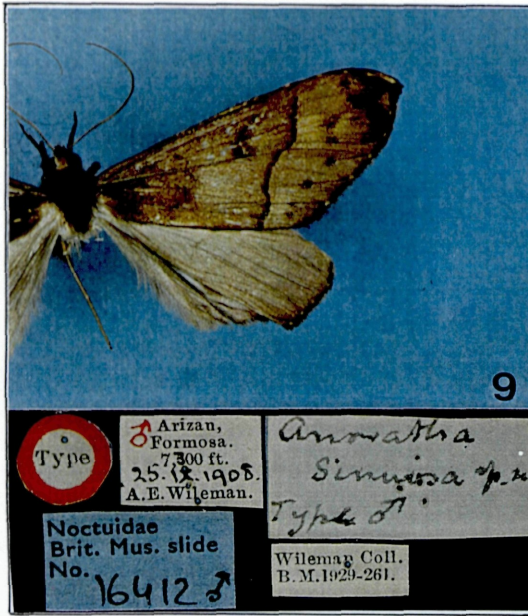


Figs. 5-8:

Fig. 5: *Anoratha costalis* MOORE, 1867 - Lectotype, ♂.- Fig. 6: *A. costalis*- ♀.- Fig. 7: *Anoratha paritalis* WALKER, [1859]1858) - Lectotype, ♂.- Fig. 8: *A. paritalis* - Paralectotype, ♀.
All specimens in BMNH.

Figs. 9-13 (next page):

Fig. 9: *Anoratha sinuosa* WILEMAN & SOUTH, 1916 - Lectotype ♂.- Fig. 10: *A. sinuosa* - Paralectotype ♀.- Fig. 11: *Anoratha albitibiata* WILEMAN & WEST, 1930 - Holotype, ♂.- Fig. 12: *A. sinuosa* - Paralectotype, ♀.- Fig. 13: *Anoratha nabalua* HOLLOWAY, 1976 - Holotype, ♀.
All specimens in BMNH.



Description:

Head (Figs. 14-15): Big, dark reddish brown. Palpi porrect, long and straight, dark reddish brown with dark scales and ivory coloured III and upper surface of II. Antennae whitish on the base.

Thorax and abdomen: Thorax especially in the male with long scales, dark reddish brown. Abdomen greyish brown, much paler than the abdomen, with dark brown fringes in the middle of the first tergites. Abdomen in the male long and slender. A8 (Fig. 19) with pab and a system of ribs and ledges on the proximal end of the segment. The segmental borderline between A2 and A3 (Fig. 20) is marked by ventrally exposed "wings" of the exoskeleton. From this proximal border of A3 two long and slender spines have there origin and protrude into the abdominal lumen of A2.

Wings: Wingspan = 52 - 54 mm; l : b = ♂ 1.54 - 1.55, ♀ = 1.4. Big species with dark reddish brown groundcolour of the forewings. Sexual dimorphism in shape and colour. Males with narrower wings and a relatively straight outer margin forming a sharp and fine pointed apex. Forewings of the females broader, apex also fine pointed, but the outer margin curved outwards. Females dark, chocolate brown with a remarkable ivory coloured costal line. Q3 straight, also ivory coloured, running from the costa down to the anal angle. W marked by some black dots. The males are quite paler, brighter reddish brown and show a slightly whitish marked costal line. Q2 and NM marked by dark brown shadows. Q3 is a distinct line, dark brown and whitish outside. W consists of big dark dots with white markings on the outer margins. Hindwing narrower in the males too, curved near the anal angle. Ground colour greyish brown with whitish dust. Q4 as a brown shade with pale line on its outer side.

Male genitalia (Fig. 16-18): The dorsal part of the protruding genitalia obviously was damaged by previous handling, therefor the uncus and the tegumen were missing. Valves bat-winged, narrow at the base and extended and very broad at the distal end. The costal margin straight at the beginning, then rounded and smoothly running into the cucullus. Similar to *A. sinuosa* WILEMAN & SOUTH, 1916. Dorsal margin of valves more rounded than in *A. albitibiata* WILEMAN & WEST, 1930. Sacculus well developed, but narrow. Ampulla (Fig. 18) of similar shape as in *A. sinuosa*. Vinculum rounded, but not so extended proximally as in *A. paritalis* WALKER, [1859] 1858. Sacculi meet in the middle with a very small, v-shaped juxta-concretion. The aed long, slender, coecum, very broad and rounded, more prominent than in other species. Distal end of aed (Fig. 17) with a fine-pointed tip and a saw-like extension on the ventral surface. Relations: vl : vb (measured at the extended distal end) = 1.85; ael : aeb = 10.

Female genitalia (Fig. 21-22): Short genitalia (gl = 3.1 mm) with a very short and weak bursa. Ductus bursae broad and sclerotized with a broad and rounded ostium area. A8 area around and distal of ostium densely covered with small spines and plates. Ductus bursae (Fig. 22) broad, incised in the middle. Relations: bl : bb = 2.3; bl : gl = 0.4.

Distribution: Northern India.

Anoratha paritalis (WALKER, [1859] 1858)

(Figs. 3-4, 7-8, 23-29, 33-34)

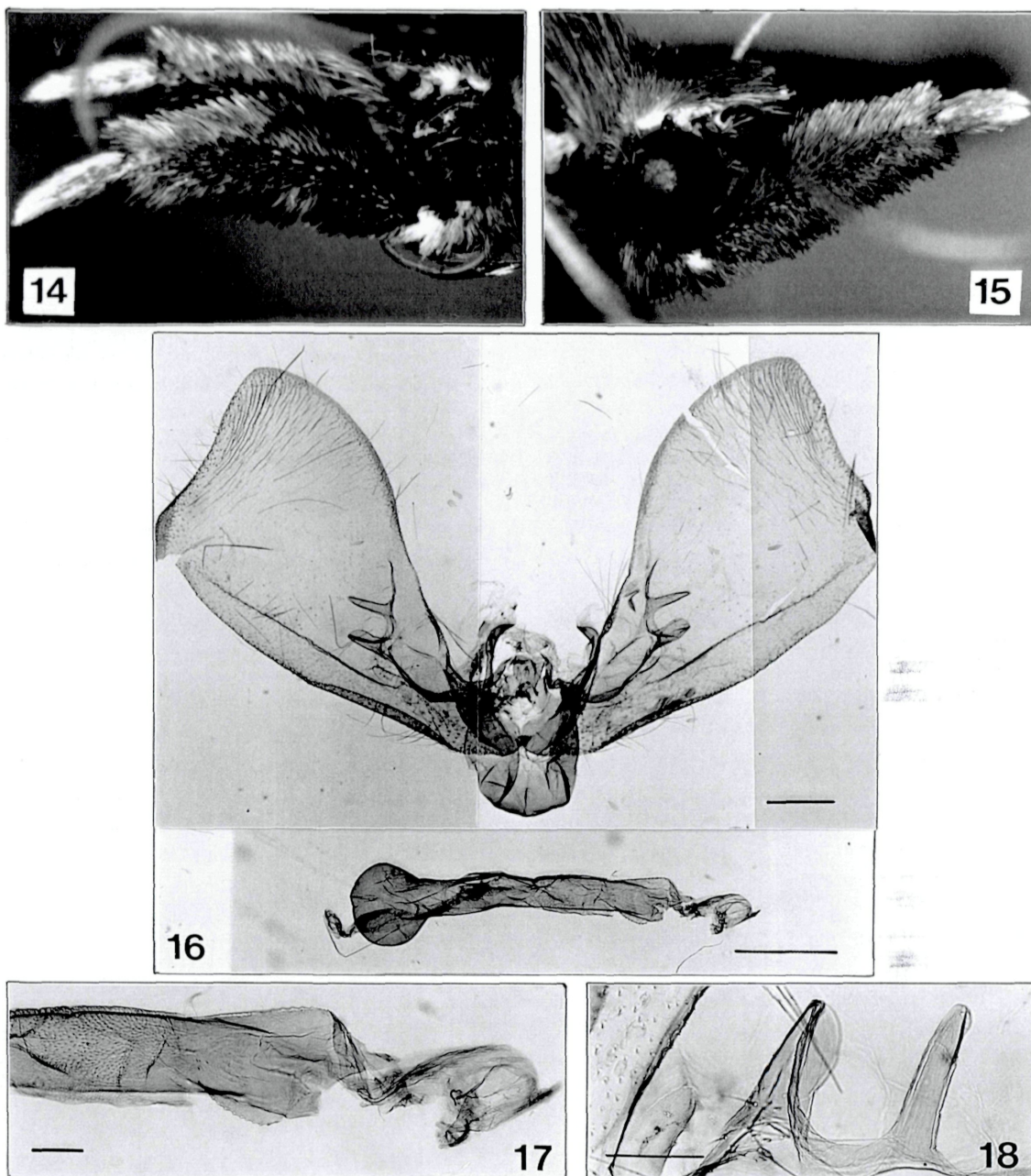
Hypena paritalis WALKER, [1859] 1858: 65.

Type material:

Lectotype (by present designation): ♂, "Lectotype \ Ceylon 52 62 \ *Anoratha paritalis* Wik Lectotype det.M.Lödl ♂ \ Noctuidae Brit. Mus. slide No. 16410 ♂" (BMNH) (Fig. 7).- **Paralectotypes:** ♀, "Type \ Ceylon 52 62 \ *Anoratha paritalis* Wik Paralectotype det.M.Lödl ♀ \ 76. *Hypena paritalis*. \ Noctuidae Brit. Mus. slide No. 16409 ♀" (BMNH) (Fig. 8).

Additional material:

Sri Lanka: 3 ♂♂, 4 ♀♀, Moore Coll. 94-106; 1 ♀, Moore Coll.; 1 ♂, Moore Coll. 94-106, 321; 1 ♀; Maskeliya; November, 2900; 1 ♀ Maskeliya, January [Abdomen missing]; 1 ♂, Maskeliya, June; 2 ♂♂, Maskeliya, February; 1 ♀, Maskeliya, 1.0 05; 1 ♂, Maskeliya, May; 1 ♀ Mackwood, 2121; 1 ♀, Ceylon, March; 1 ♂, Mackwood Coll., B.M. 1927-341; 1 ♀ Pundaloya, 5; 1 ♂, Ceylon 95-135; 1 ♂, Ceylon; 1 ♂, Green Coll., 91-26, Pundalova Ceylon; 1 ♂, Dunduloya, Mar. 97; 1 ♀, 5.92, 67.20., Ex.Coll.Ed. Brabant, 1920; 1 ♀, Nilgiris, Hampson Coll. 89-129; 1 ♀, W. Hof; 1 ♀, Kandy; 1 ♂, Galboda, 9. 05; 1 ♂, 1 ♀, Kunkles, 9. 08; 1 ♀, Wattegama 15.4.98 [Abdomen missing] (BMNH).- Numerous papered ♂♂ and ♀♀, World's End, S-side, 6°48' N.L., 80°51' E.B., primary rainforest 1950 m, 1.-2.IV.1997, 13°C/1 a.m., leg. Schintlmeister & Siniacv (NHMW).



Figs. 14-18 *Anoratha costalis* MOORE, 1867:

Fig. 14: ♀ - head, lateral view.- **Fig. 15:** Lectotype ♂ - head, lateral view.- **Fig. 16:** Lectotype ♂ - genitalia total, Noctuidae BM gen.sl. 15360. Scale = 0.5 mm.- **Fig. 17:** dto.- distal end of aed. Scale = 0.1 mm.- **Fig. 18:** dto.-ampulla of left valve. Scale = 0.1 mm.

Description:

Head: Palpi porrect, long and more or less straight. II concave from the under side. Palpi dark fuscous or yellow brown, on the upper side with pale, greyish or whitish scales. Antennae on the base ivory coloured.

Thorax and abdomen: Thorax with long scales, fuscous or yellowish brown. The females paler, more yellowish. A8 of the males dorsally and ventrally with a system of ribs and ledges (Fig. 24). The pab (Fig. 25) straight across the St8 densely covered with scale insertions. St8 proximally of pab with two curved, goblet-shaped ledges. The proximal segment line of A8 with a "M"-shaped rib (Fig. 26), flat and extended. T8 bears two distinct, small, triangular and granulated fields of scale insertions at the distal end. In the middle a thin ledge goes proximally and runs into a lyra-shaped field. The segmental borderline between A2 and A3 (Fig. 23) is marked by ventrally exposed "wings" of the exoskeleton. From this proximal border of A3 two heavily sclerotized spines have there origin and protrude into the abdominal lumen of A2.

Wings: Wingspan = 40 - 50 mm; l : b = ♂ 1.64, ♀ 1.62. Details of wing venation see Figs. 3-4. Wings narrow, ground colour fuscous and reddish yellow or beige. The males with ivory coloured costal stripe, the females often with a dark brown coloured costa. The forewings spotted with dark brown. Q3 slightly oblique, straight, not curved or waved, dark brown accompanied by a pale line on the outer margin. CF very small, ivory coloured. W represented by dark brown dots. Hindwings uniformly dark greyish brown. Fringes yellow brown.

Male genitalia (Figs. 27-29): Shape of the valves typical for the genus although narrower and costal margin more concave than in the other species. As typical for *Anoratha* the sacculus base bears a lot of long hair-scales laying in the middle of the genitalia corpus between the bat-wing-like valves. Costal margin also with a row of long hair-scales. In the middle of the valves a clasping double-horn is situated. The length of the horns not even reaches the half of vb. This process represents a real ampulla originating directly from the central surface of the valve with a continuing fold to the caudal articulation of the valve. The sacculus with an oblong granulated field in the first quarter of its length. Sacculi meet at the middle with a small and slender, deltoid-shaped concretion of the proximal part of the juxta-area. Vinculum very broad and long, extended proximally more significantly than in the other species, almost square with rounded edges. Saccus just indicated by an insignificant, flat, little arch. Uncus (Fig. 29) strongly hooked, broad at the base, narrow at the end. The distal part fine pointed with an additional very small hook. Uncus at the base steep and straight, running quickly to the top of the head, then continuously narrowed and without a concave curve on the upper margin. Hairy scales situated chiefly on the distal half of the upper surface. The aed long and very slender, coecum blown up, as usual in this genus. The coecum flattened, the rounded edges laterally a little bit upcurved. The distal end pointed to a bill-like tip (Fig. 28). Relations: uh : ul = 0.58; ul : hm = 0.35; vil : hm = 0.23; vl : vb (measured at the extended distal end) = 2.7; vl : hm = 1.06; ael : aeb = 12.8.

Female genitalia (Figs. 33-34): Very short (gl = 2.6 mm) and very simple. Papillae big and densely covered with hairs and bristles. Apophyses posteriores longer than Apophyses anteriores. Ductus bursae (Fig. 34) heavily sclerotized, slimmer than in other species, notched in the middle. Bursa a small flabby sack. Relations: bl : bb = 2; bl : gl = 0,38.

Distribution: Sri Lanka.

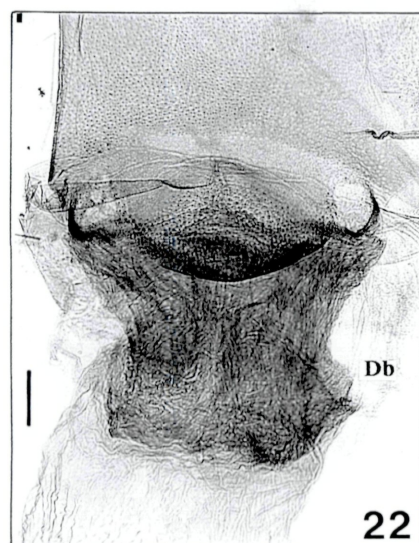
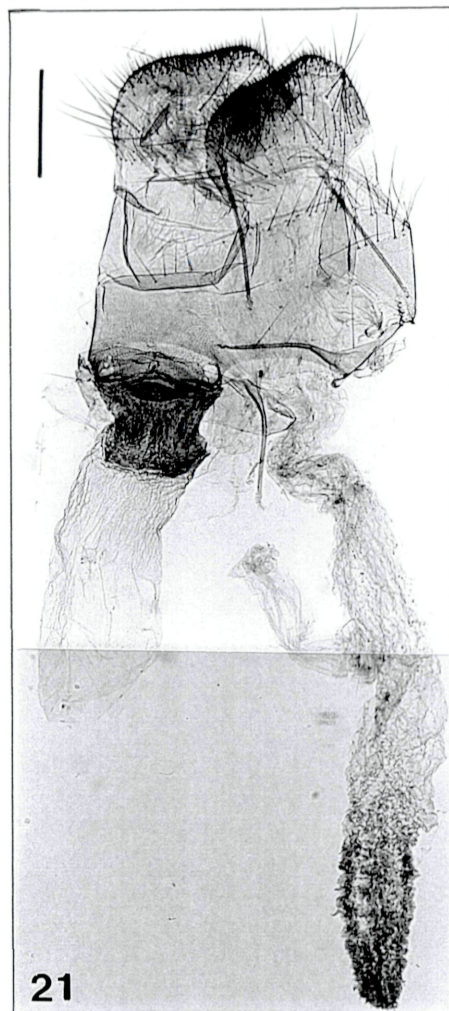
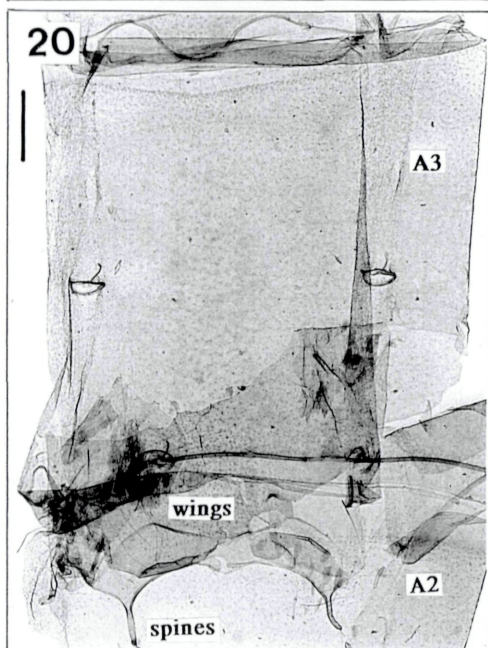
Anoratha sinuosa WILEMAN & SOUTH, 1916

(Figs. 1, 9-10, 12, 30-32, 35-38)

Anoratha sinuosa WILEMAN & SOUTH, 1916: 267.

Type material:

Lectotype (by present designation), ♂: "Type \ ♂ Arizan, Formosa. 7,300 ft. 25. IX. 1908. A.E.Wileman \ *Anoratha sinuosa* sp.n Type ♂ \ Noctuidae Brit. Mus. slide No. 16412 ♂ \ Wileman Coll. B.M.1929-261." (BMNH) (Fig. 9).- **Paralectotypes:** 1 ♀ "Allotype \ ♀ Arizan, Formosa. 7,300 ft. V - VII. 1908. A.E.Wileman \ *Anoratha sinuosa* sp.n. Type ♂ \ Noctuidae Brit. Mus. slide No. 16413 ♀ \ Wileman Coll. B.M.1929-261." (Fig. 10); 1 ♀ "Paratype \ ♀ Arizan, Formosa. 7,300 ft. 16. IX. 1906. A.E.Wileman \ *Anoratha sinuosa* sp.n. Cotype ♀ \ 9 30. FI.[or "F!" ?] \ Wileman Coll. B.M.1929-261." (Fig. 12); 1 ♂ "Paratype \



Figs. 19-22:

Anoratha costalis MOORE, 1867

Fig. 19: Lectotype ♂, Noctuidae BM gen. sl. no. 15360 - A8. Scale = 0.5 mm.- **Fig. 20:** dto.- A2-A3. Scale = 0.5 mm.- **Fig. 21:** ♀, Noctuidae BM gen. sl. no. 15361 - genitalia total, Scale = 0.5 mm.- **Fig. 22:** dto.- Ductus bursae. Scale = 0.1 mm.

Figs. 23-28. *Anoratha paritalis* Walker, [1859] 1858. ♂, BM gen. sl. no. 16410.

Fig. 23: A2 and A3 with endoskeleton. Scale = 0.5 mm.

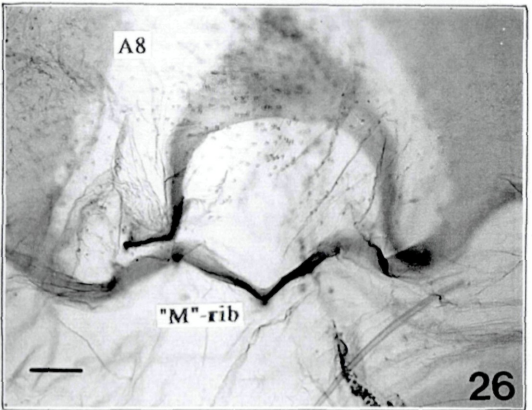
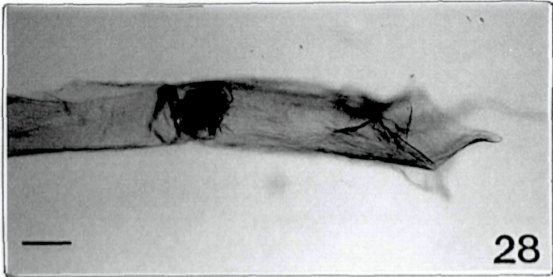
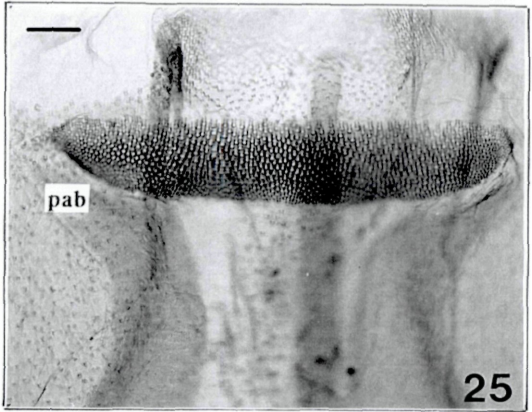
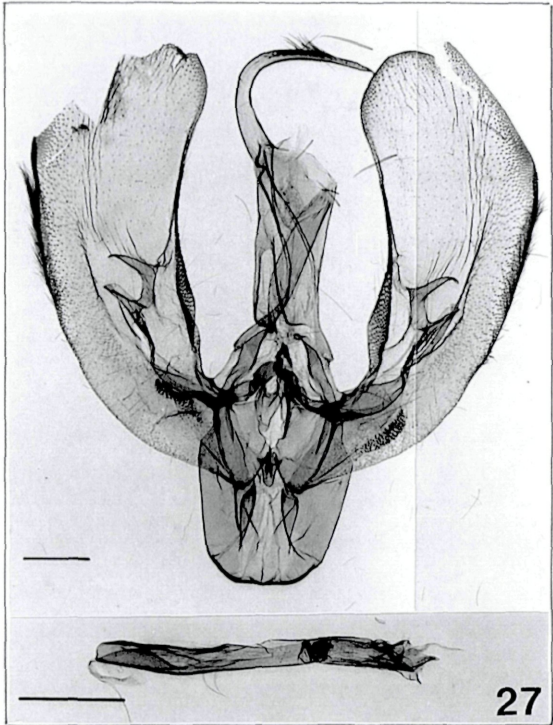
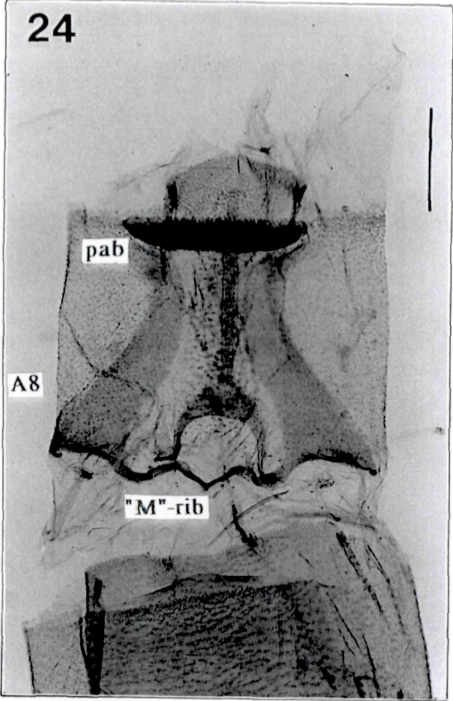
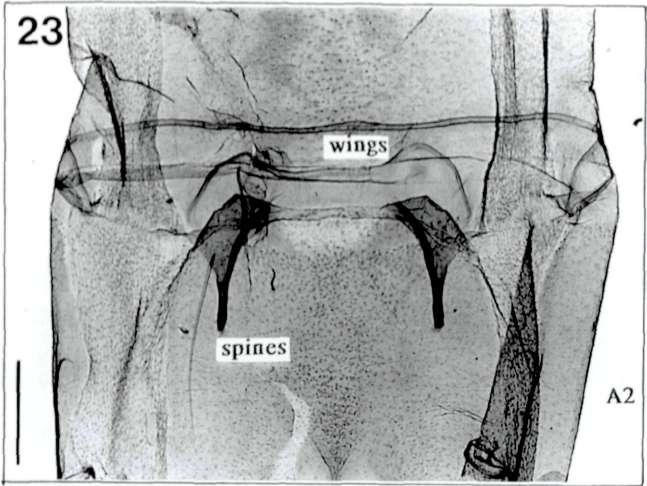
Fig. 24: A8 with pab and „M“-rib. Scale = 0.5 mm.

Fig. 25: Detail of A8, pab. Scale = 0.1 mm.

Fig. 26: Detail of A8: „M“-rib. Scale = 0.1 mm.

Fig. 27: ♂-genitalia, total. Scale = 0.5 mm.

Fig. 28: Distal end of aed. Scale = 0.1 mm.



Figs. 29-34:

Fig. 29: *Anoratha paritalis* WALKER, [1859] 1858. Lectotype ♂, BM gen. sl. no. 16410. Uncus. Scale = 0.1 mm.

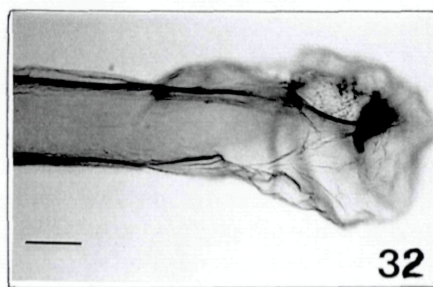
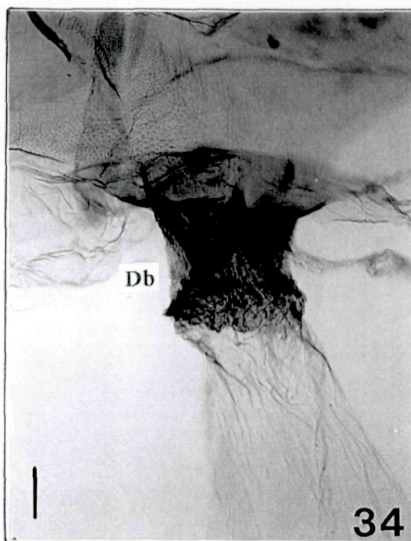
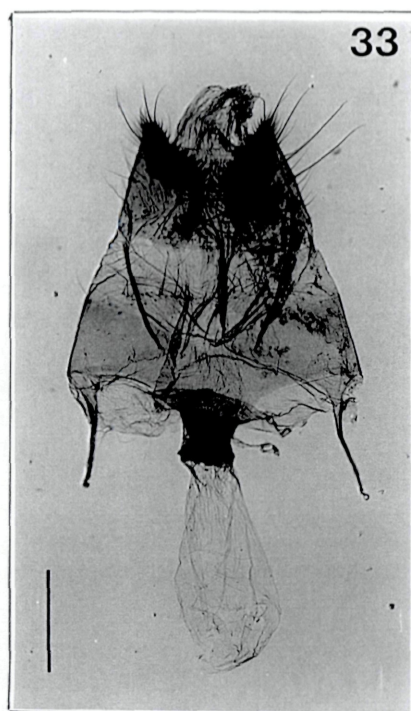
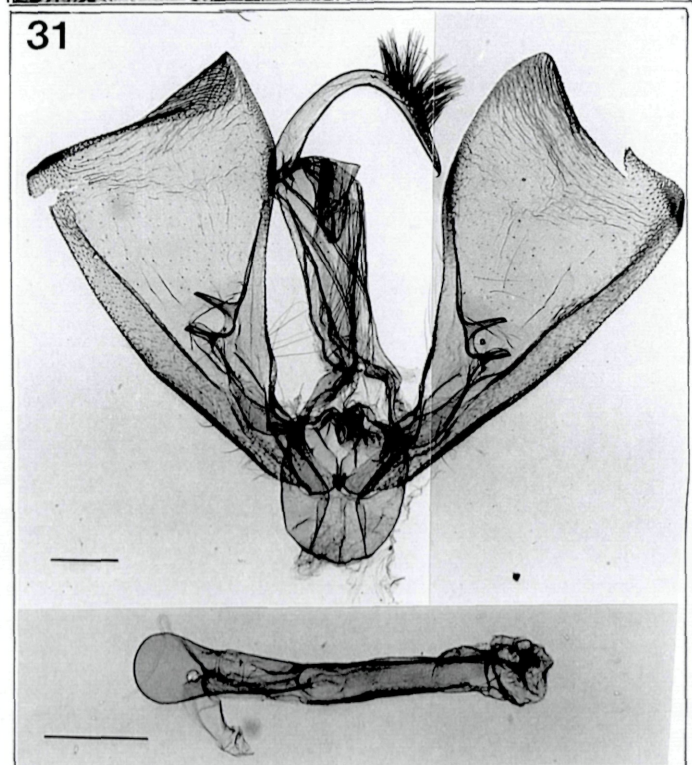
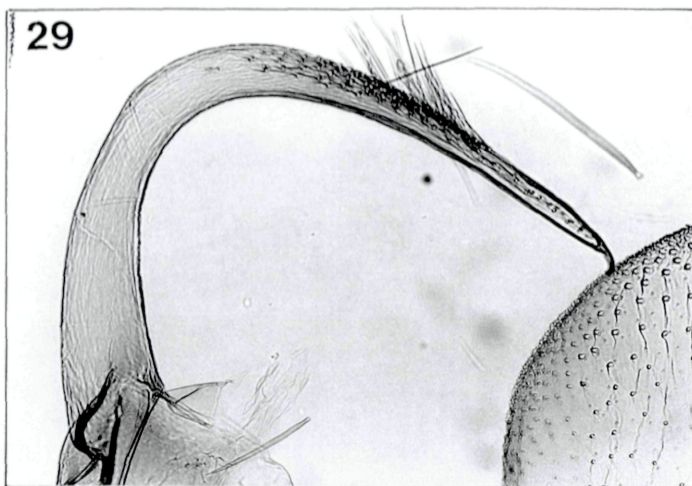
Fig. 30: *Anoratha sinuosa* WILEMAN & SOUTH, 1916. Lectotype ♂, BM gen. sl. no. 16412. Uncus. Scale = 0.1 mm.

Fig. 31: dto., ♂-genitalia, total. Scale = 0.5 mm.

Fig. 32: dto., Distal end of aed. Scale = 0.1 mm.

Fig. 33: *Anoratha paritalis* WALKER, [1859] 1858. Paralectotype ♀, BM gen. sl. no. 16409. ♀-genitalia, total. Scale = 0.5 mm.

Fig. 34: dto., Ostium and Db. Scale = 0.1 mm.



♀ Arizan, Formosa. 7,300 ft. 18. IX. 1906. A.E.Wileman \ *Anoratha sinuosa* sp.n. Cotype ♂ \ 9 30. Fl.[or "Fl" ?] \ Wileman Coll. B.M.1929-261." (BMNH).

Additional material:

Taiwan: 1 ♂, 2 ♀, Arizan, 7300 ft., 2.VIII-12.VIII. 1908, A.E. Wileman; 1 ♀, Kaegi Distr., 7-10,000 ft, July, 1909-88; 5 ♀ ♀, Koannania, cent. Formosa, Dr. A. Moltrecht [1 ♀ abdomen missing] (BMNH).

Description:

Head: Reddish or dark brown, labial palps with long, light brown scales on II. Antennae brown.

Thorax and abdomen: Thorax dark reddish brown, with long scales. Abdomen with plain and insignificant pab (Fig. 35) at the distal end of A8. Boundary of segments A8/A7 externally with a smoothly waved rib, internally with a pair of sickle-shaped apophyses protruding in the abdominal lumen (Fig. 35). The segment border of A3/A2 externally with two fine pointed wings (not rounded as in *A. paritalis*) and internally with two long spines (Fig. 36). These pair of apophyses not so heavily sclerotized as in *A. paritalis* and not so straight, curved on their inner margins.

Wings: Wingspan = 43 - 46 mm; l : b = ♂ 1,85, ♀ = 1,66 - 1,7. Forewings narrow, moderately fine pointed. Ground colour greyish or reddish brown in the male, dark chocolate brown in the female. Ivory coloured costal stripe in the female present. The yellow-white band bright in the subcostal area, covered with brown along the costal margin. Q3 distinct white or ivory coloured, with a big wave in the middle and without shades. Q3 in the male dark brown and with the same run. SF small and yellow brown. W in the male as dark brown spots. NM present as a dark brown shade with insignificant shape. Hindwings greyish brown, SF yellow brown, very small.

Male genitalia (Figs. 30-32): Typical *Anoratha*-shape, bat-winged valves narrow at the base and extended and very broad at the distal end. The costal margin straight at the beginning. Sacculus well developed, but narrow. Ampulla of similar shape as in *A. paritalis*, but distal horn straight, not slightly curved and not fine pointed. Vinculum rounded, but not so extended proximally as in *A. paritalis*. Uncus (Fig. 30) strongly hook-shaped, very big and prominent. Sacculi meet in the middle with a very small, v-shaped juxta-concretion. The aed long, slender, coecum, as usual very broad and rounded. Distal end of aed (Fig. 32) with a fine-pointed tip. Relations: uh : ul = 0.62; ul : hm = 0.43; vil : hm = 0.18; vl : vb (measured at the extended distal end) = 2; vl : hm = 1.18; ael : aeb = 10.1.

Female genitalia (Figs. 37-38): Short genitalia (gl = 2.5 mm) with a very short and weak bursa. Ductus bursae broad and sclerotized with a triangular ostium area. A8 area around and distal of ostium densely covered with small spines and plates. Ductus bursae (Fig. 38) broad at the ostium, a little bit narrower proximally. Relations: bl : bb = 2.25; bl : gl = 0.35.

Distribution: Taiwan.

The species is treated as a subspecies of *A. costalis* in the collections of the BMNH. We follow the opinion of HEPPNER & INOUE (1992) and accept *A. sinuosa* as a good species.

***Anoratha albitibita* WILEMAN & WEST, 1930**

(Figs. 11, 39-44)

Anoratha albitibiata WILEMAN & WEST, 1930: 109.

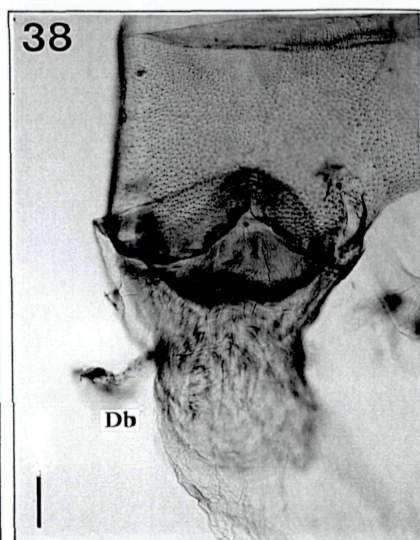
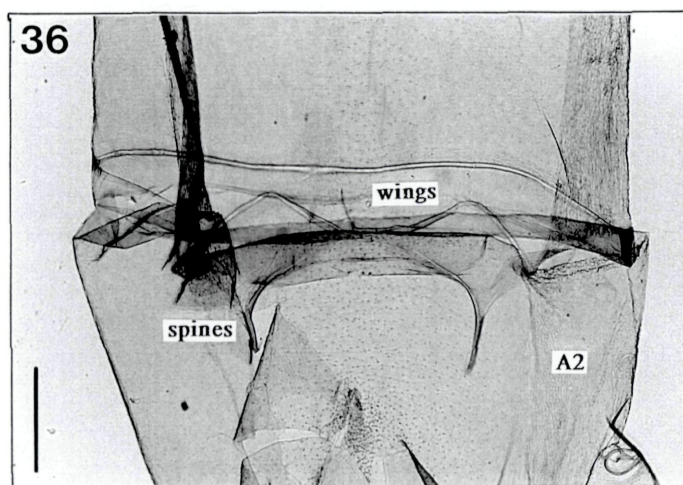
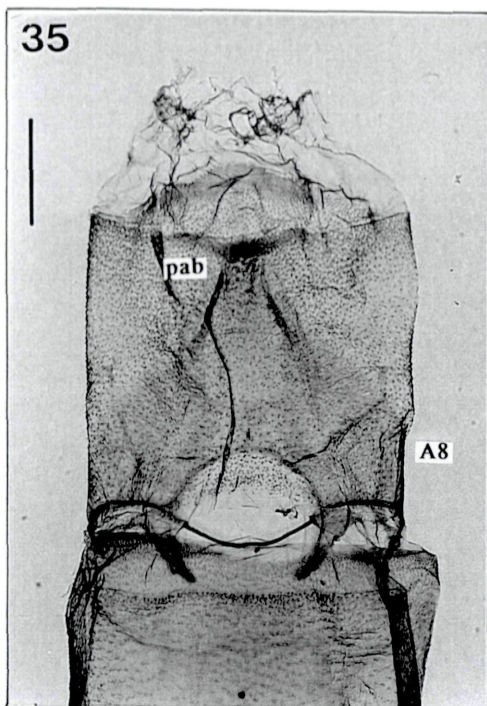
Type material:

Holotype: ♂, "Type \ Haight's Place, Puai. subprov. Benguet, Luzon. 7,000 ft. 5.XII.1912. A.E.Wileman. \ *Anoratha albitibiata* Wileman & West. Holotype♀ [error] \ Wileman Coll. B.M. 1929-261. \ Noctuidae Brit. Mus. slide No. 16411 ♂" (BMNH) (Fig. 11).

Description:

Head: Dark chocolate brown, antennae pale, white on the upper side of the first third, labial palps dark chocolate brown, with white scales on III and the upper side. Antennae whitish in the basal fourth.

Thorax and abdomen: Thorax dark chocolate brown, with long hair-like scales. Legs pale greyish and whitish. The pab (Fig. 44) flat and weak at the distal end of the 8th sternit. Boundary of A8/A7 with a curved rib. The segment border of A3/A2 (Fig. 41-42) externally with a broad and curved,



Figs. 35-38 *Anoratha sinuosa* WILEMAN & SOUTH, 1916:

Fig. 35: Lectotype ♂, Noctuidae BM gen.sl.no. 16412 - A8. Scale = 0.5 mm.- **Fig. 36:** dto.- A2 and A3. Scale = 0.5 mm.- **Fig. 37:** Paralectotype ♀, Noctuidae BM gen.sl.no. 16413 - genitalia, total. Scale = 0.5 mm.- **Fig. 38:** dto.- Ostium and Db. Scale = 0.1 mm.

sclerotized plate (= "wings") and internally with two slightly curved spines. These pair of apophyses are heavily sclerotized.

Wings: Wingspan = 50 mm; $l : b = \sigma 1,63$. Forewings dark chocolate brown with a reddish touch. Ivory coloured costal line very prominent, marked brownish on the costal margin. Q3 white, relatively broad and with two smooth curves, beige brown on its inner margin. CF marked with very small pale dots. W as some shady, black dots present. SF white, very tiny. Hindwings pale, greyish brown, at the outer margin darkened and with tiny, little, white SF.

Male genitalia (Figs. 39-40, 43): Valves very broad at the distal part, with an edge on the costal margin, which is sharper than in *A. sinuosa* and a concave costal margin near the base. The cucullus with a sharp corner. Sacculus well developed, narrow. A field of hair-like scales on the base of the costal margin. Ampulla similar to those of the other species. Viculum broad, rounded, a little bit tapered to its proximal end. Uncus (Fig. 43) very big and prominent, hook-shaped, concave on the dorsal margin before the terminal hook. Clavi small and anvil-shaped. The Juxta is a slightly sclerotized, gaping plate. The aed long, slender with a broad and rounded coecum. The distal tip (Fig. 40) broadened, finger-tip-like. Relations: $uh : ul = 0.59$; $ul : hm = 0.42$; $vil : hm = 0.2$; $vl : vb$ (measured at the extended distal end) = 2; $vl : hm = 1.1$; $ael : aeb = 11.8$.

Distribution: Known only from the male holotype from Luzon.

Anoratha nabalua HOLLOWAY, 1976

(Figs. 13, 45-47)

Anoratha nabalua HOLLOWAY, 1976: 40, pl. 15:181.

Type material:

Holotype, ♀: [Borneo] "Holotype \ K 1133 [genitalia prep. no. of J.D.Holloway] \ C.E.M.K. Radio Sabah 6/8/65" (BMNH) (Fig. 13).- **Paratypes**: 2 ♀♀, same locality.

Description:

Head: Dark brown, labial palps with dark brown scales and some pale sclaeas.

Thorax and abdomen: Dark chocolate brown, thorax underside and laterally with pale, whitish hair-like sclaeas.

Wings: Wingspan = 52 mm; $l : b = \sigma 1,52$. Broad, huge forewings, dark brown with a fuscous touch. Q3 white, running strictly down from costal margin to tornus, slightly waved. Q3 on the inner margin slightly darker. Costa broadly covered with whitish scales. W marked by black dots. Hindwings whitish, covered with brown scales, especially in the marginal area. Fringes brown.

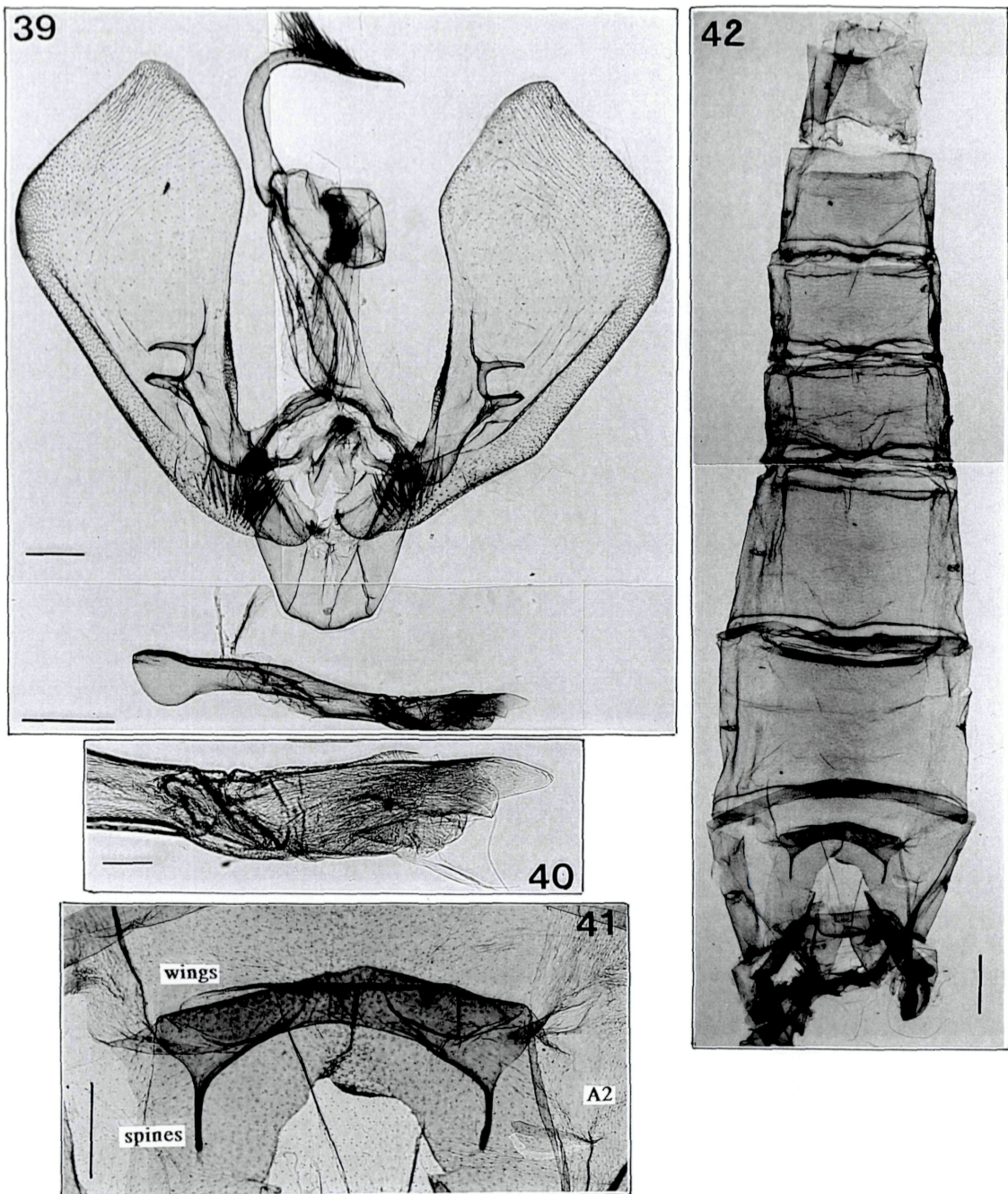
Female genitalia (Figs. 45-47): Short genitalia ($gl = 3.4$ mm) with a very short and weak bursa. Ductus bursae (Fig. 47) broad and sclerotized with a broad triangular ostium area and almost straight margins. A8 area around and distal of ostium densely covered with small spines and plates. Relations: $bl : bb = \text{no data}$, bursa collapsed; $bl : gl = 0.31 - 0.33$.

Distribution: Borneo.

Discussion

A close relationship of *Anoratha* with the type genus of the subfamily Hypeninae, *Hypena* SCHRANK, 1802, could not be verified. The genus *Hypena* is the focus of a truly monophyletic bundle of genera like *Dichromia* GUENÉE, 1854, *Xoria* NYE, 1975, *Harita* MOORE, 1882, *Ricla* WALKER, 1869 and *Sarmatia* GUENÉE, 1854. These genera can be defined as the *Hypena*-group. Related to these genera - though a little bit distant - stands *Acidon* HAMPSON, 1896 and possibly forms its own tribe.

The members of the genus *Anoratha* exhibit several features which make a close relationship to *Hypena* s.l. quite unlikely. The aed shows a completely different ground-plan, the aed-cuff (LÖDL 1993c : 548 and LÖDL 1994: 384) and the shark-teeth (LÖDL 1993b: 456 and LÖDL 1994: 384) are absent. Resemblances to the African genus *Phanaspa* are found. *Phanaspa* shows characters which could be well interpreted as synapomorphies of a group of "long-bodied" Hypeninae. The genus *Phanaspa* has been revised by LÖDL (1995). The following characters of both genera support the assumption of monophyly:



Figs. 39-42 *Anoratha albitibiata* WILEMAN & WEST, 1930:

Fig. 39: Holotype ♂, Noctuidae BM gen.sl.no. 16411 - genitalia, total. Scale = 0.5 mm.-

Fig. 40: dto.- distal end of aed. Scale = 0.1 mm.- Fig. 41: dto. - A2 and A3. Scale = 0.5 mm.-

Fig. 42: dto.- abdomen, total. Scale = 0.5 mm.

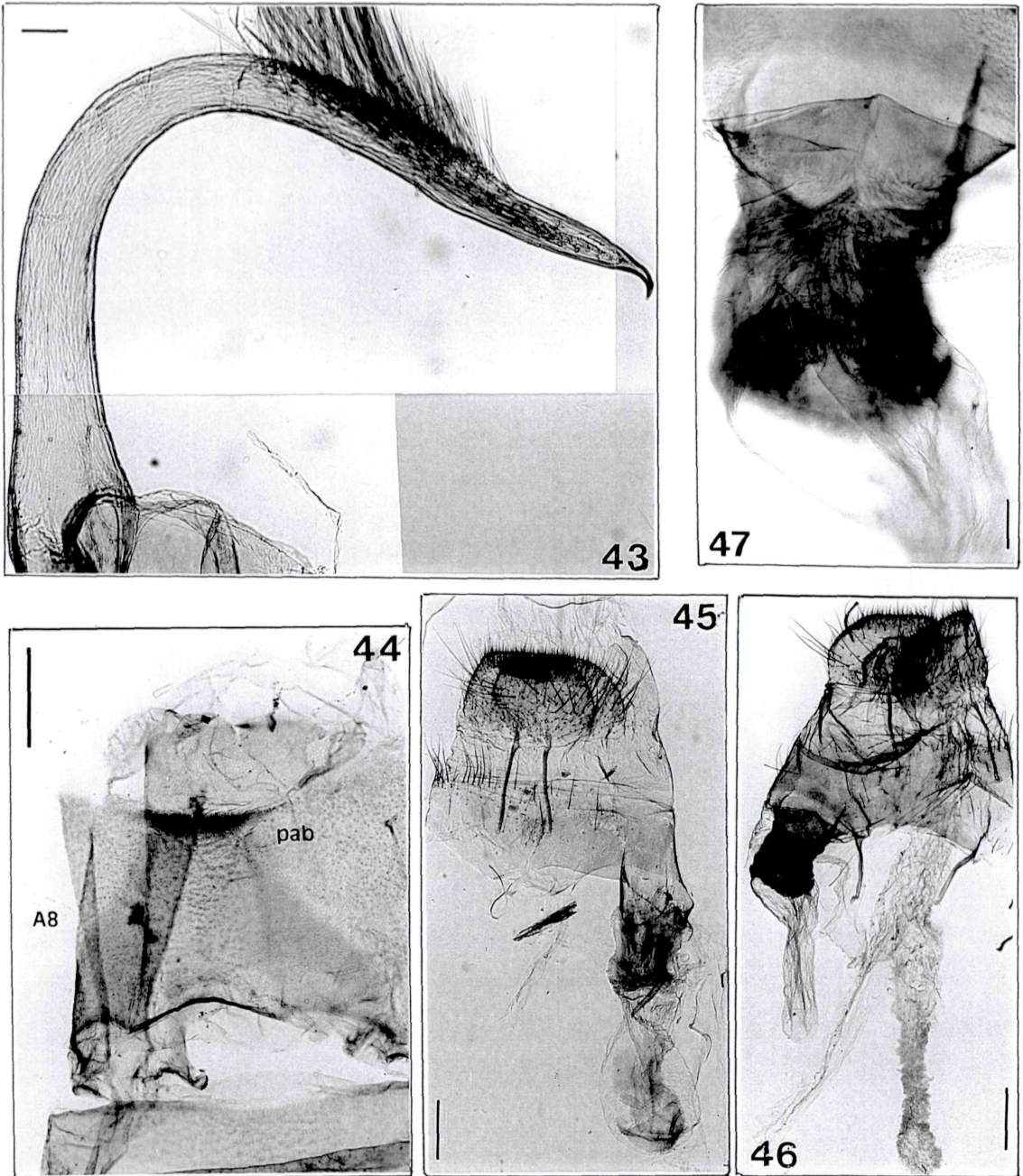
- External sexual dimorphism similar, abdomina of the males slim and slender.
- Segmental ribs and sclerotized clasps protrude in the abdominal lumen and most likely are structures of muscle origin. A resting position of these species with an abdomen curved upwards can be proposed. This is a common feature within the subfamily Euteliinae which, by the way, should kept in mind when the exact taxonomic position of *Anoratha* is discussed in detail.
- The vinculum in both genera is remarkably extended proximally. In *Anoratha* big and rounded, in *Phanaspa* long, cone-shaped and fine-pointed. This gives both types of genitalia a somewhat dysplastic touch.
- The aed is long, more or less straight and slender. In both genera the coecum is flattened and blown up.
- The females exhibit an extraordinarily uniform, very simple type of genitalia. The most striking feature is a comprehensive, strongly sclerotized Ductus bursae and a flabby, skinny, short bursa without signa. The accessory glands seem to be of taxonomic importance and further work should pay tribute to this realization.

Due to this arguments the authors for the moment cautiously subscribe the concept of a monophyletic line *Anoratha-Phanaspa*. The genera *Maxia* HEYDEN in SAALMÜLLER, 1891 and *Brontypena* HOLLAND, 1900 need further investigation. However, to our recent knowledge the *Anoratha-Phanaspa* line represents a relatively isolated group or, at least, isolated from the centre-lineage of Hypeninae, the *Hypena*-group. For the moment a taxonomic position of *Anoratha-Phanaspa* within the subfamily Hypeninae is assumed. A second theory is that the *Anoratha-Phanaspa* line will find contributing members to its monohyletic concept by a group of genera presently hidden in the "mega-subfamily" Catocalinae which without doubt is a highly heterogenous one. The subfamily complex Catocalinae-Ophiderinae is nowadays the major field of taxonomic hide-and-seek and many a genera await a proper grouping process to true monophyletic units. The size of these units will be then responsible for taxonomic evidence and grouping to subfamilies. In the moment the authors are unable to estimate the "size" of the real Hypeninae and therefor the placement of *Anoratha-Phanaspa* in this subfamily must remain a provisional one. However, this second theory is supported by some findings concerning the genus *Phyllodes* BOISDUVAL, 1832 which exhibit remarkably similar male genitalia which could be interpreted as an evidence for monophyly. *Phyllodes* traditionally is treated as an Ophiderinae.

The species of *Rhynchina* GUENÉE, 1854 and *Zekelita* WALKER, 1863 (= *Rhynchodontodes* WARREN, 1913) (LÖDL & MAYERL 1997a, 1997b, MAYERL & LÖDL, 1997) is a very interesting one with a wide selection of external and internal features with high morphological contrast. This additionally is a monophyletic unit possibly forming a distinct tribe. Similar to the *Hypena*-group the *Rhynchina*-group is based on genera rich in species and well defined by some synapomorphies. One of the most valuable features is the TeE ("teguminal ear", "Teguminalohr"), an extended loop of the tegumen near the caudal articulation of the valve. It was proposed by LÖDL & MAYERL 1997a: 240 for the first time. Beside the voluminous genera *Rhynchina* and *Zekelita* this big group contains the genus *Proluta* SAALMÜLLER, 1891 and probably the extremely rare and local species of the genus *Mecistoptera* HAMPSON, 1893. If the *Rhynchina* unit can remain in the Hypeninae is also unsure and clearly depends on the fact of finding "missing links" between the species with aed-knee and aed-cuff and the group of species with TeE.

Worth to be mentioned is a genus with peculiar and apomorphic characters: *Britha* WALKER, [1866] 1865 occurs with a handful of species in the tropical zone of the southern hemisphere from equatorial Africa, through Madagascar and the Oriental region to Australia. It shows remarkable male genitalia with an asymmetric ground plan which is quite unusual for that group of noctuids. The shape and structure of the copulatory system would remind on the herminiine type of genitalia but the species have a clear postspiracular hood of the tympanum.

The authors have also taken into consideration the genus *Catada* WALKER, [1859] 1858. Unfortunately so far the knowledge of this genus is so poor that the present contributory effect on the classification of the Hypeninae is inferior. *Catada* turned out to be one of the most erroneously interpreted genera of Noctuidae with a mixed selection of taxa similar to those of *Rhynchina* and *Zekelita* before they have been revised (LÖDL & MAYERL 1997a, 1997b, MAYERL & LÖDL, 1997). A first impression based on the comprehensive study of the external and internal features of the type species *Catada glomerata* WALKER, [1859] 1858 (= *Catada vagalis* (WALKER, [1859] 1858 [*Bocana*])) brought



Figs. 43-47:

Fig. 43: *Anoratha albitibiata* WILEMAN & WEST, 1930, Holotype ♂, Noctuidae BM gen.sl.no. 16411 - uncus. Scale = 0.1 mm.- **Fig. 44:** dto.- A8. Scale = 0.5 mm.- **Fig. 45:** *Anoratha nabalua* HOLLOWAY, 1976, Holotype ♀, JDH K1133 - genitalia, total. Scale = 0.5 mm.- **Fig. 46:** *Anoratha nabalua* HOLLOWAY, 1976, Paratype ♀, Noctuidae BM gen.sl.no. 16414 - genitalia, total. Scale = 0.5 mm. - **Fig. 47:** dto.- Ostium and Db. Scale = 0.1 mm.

to light some similarities to the long-bodied and slim-winged *Anoratha*-lineage. But there are so many distinct and derived characters (especially the sacculus and the uncus of the male genitalia) that it is very difficult to come to a final conclusion about the *Catada*-lineage by now.

Acknowledgements

Our thanks are due to Mr. David Carter and Mr. Martin Honey, BMNH for their help and generosity. We thank the BMNH for the possibility to use the Axioscop Zeiss MC80 for producing the genitalia pictures.

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Autor(en)/Author(s): Lödl Martin, Gaal-Haszler Sabine

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